

STUDIES ON THE LEAF-BLIGHT OF ARECANUT CAUSED BY *Curvularia* sp.

By

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Introduction

Arecanut is an important money crop that is extensively cultivated in South Kanara. The need for the production of quality seedlings for rejuvenating the existing old gardens, as well as for bringing up new plantations is too evident to be emphasized. At the Central Arecanut Research Station, Vittal, a large number of quality arecanut seedlings are annually raised and distributed to the growers. The yellow spot was first noticed in this nursery on arecanut seedlings in February 1958. One to two and a half year old seedlings were seen to be susceptible to the leaf-spot attack whereas the grown-up palms were not. The causal fungus which was repeatedly isolated from the spot lesions has been identified as a species of *Curvularia*. Johnston (1959) has recorded a *Curvularia* leaf-spot and blight on oil palm seedlings in West Africa. R. Menon (1959) recorded the occurrence of *Ceriospora arecae* and *Dimerosporina arecae* on arecanut seedlings which have been found to be causing leaf-blight. There does not appear to be any record of a *curvularia* leaf-blight on the arecanut seedlings. The pathogen has been studied in detail and the findings have been presented hereunder.

Symptoms

Young seedlings in the nursery about a year old as well as freshly planted seed-

lings about 2 to 2½ year old are seen to be attacked. The early attack is noticed during February-March and the incidence is on the increase till about the onset of rains. Light yellow hallow, measuring from 0.3 cm. to 1 cm. in diameter develop on the laminae. These patches enlarge gradually assuming in the meanwhile a deeper yellow hue. Many such spots may appear on each leaf and the enlarged spots measure from 2.4 cm. to 8.0 cm. in length. The deeper yellow spot is surrounded by a dull hallow. In the centre of the spots, minute brown shallow areas of the size of a pinhead appear. Here at a later stage conidia make their appearance. With the advancement of infection the spots coalesce forming large yellowish patches. There is necrosis of leaf-tissue hastened by the entry of secondary fungi and this is followed by shredding. As a result of the attack, the seedlings get disfigured and stunted and in severe cases young seedlings are found to die.

Plants under exposed conditions are found to be generally more susceptible to the attack whereas those in atleast partial shade are noticed to be free. Counts recorded in a nursery experiment laid out to determine the optimum manurial requirement of seedlings revealed that the plants receiving a heavy manurial dose can resist the attack to a certain extent.

The fungus

The fungus isolated by the tissue culture method makes a dense fluffy growth of greenish black colour on Potato dextrose as well as Oat agar media. The mean width of the mycelium is 3.3μ . Conidia are freely formed on Conidiophores, distributed in the mycelial growth. Sometimes

minute erect structures made of bundles of somatic hyphae appear in the culture tubes and plates. These bear innumerable conidiophores. The conidia or spores are dark-brown, small, and 4 septate. They are commonly $19.66 \times 10.89 \mu$, varying however from $23.10 \times 10.20 \mu$ to $17.49 \times 9.90 \mu$. These spores readily germinate in distilled water as well as in 2% glucose and sucrose solution in 15 to 20 hours.

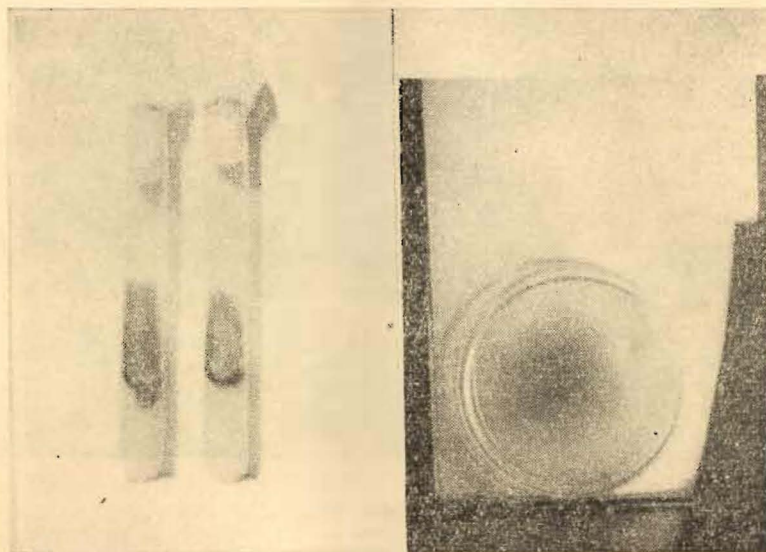


Plate I

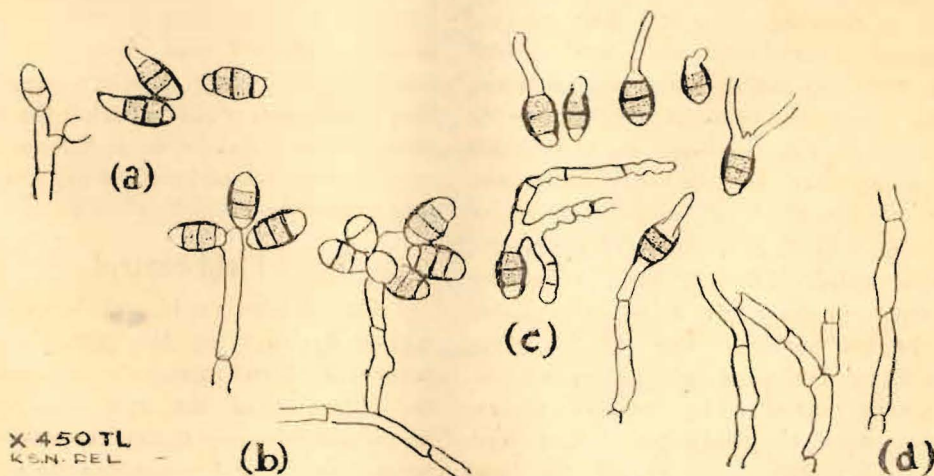


Plate II

Inoculations

Inoculations were made to test the pathogenicity of the fungus. In these tests spore suspensions as well as bits

of culture were used. Inoculations with spore suspensions on injured and uninjured detached leaves were not successful.

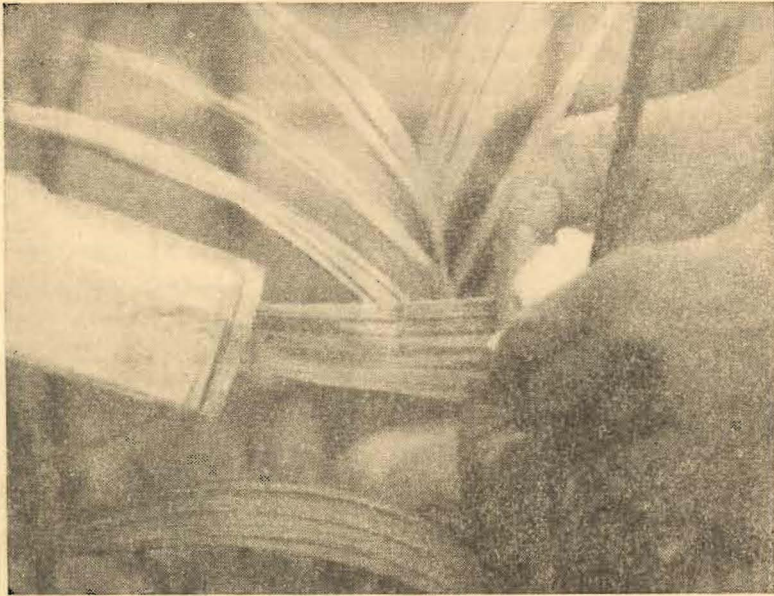


Plate III

Inoculations in the open were carried on young absolutely disease free arecanut seedlings growing in pots. The laminae selected for inoculation were washed well with sterile distilled water several times. These were inserted into clean wide mouthed glass bottles lined on the inside with damp filter paper and fixed in the pots. After gently scratching the point of inoculation once or twice with a sterilized needle, bits of culture about 2 mm. in diameter cut out from the culture tubes were placed on the leaf surface. The mouths of the humid chambers were plugged with wads of sterile cotton. The outsides of these bottles were frequently drenched with water to keep them cool whereas the damp filter papers were wetted with sterile dis-

tilled water whenever required. Infection took place and the symptoms appeared in about 40 hours on the leaf surface. Checks merely scratched and inoculated with sterile distilled water remained unaffected. The fungus was reisolated from the inoculated spots. Cashew and coconut leaves similarly inoculated however did not show any symptoms.

Field control

The disease could not be easily controlled by spraying the plants with one percent Bordeaux mixture once a week but the intensity of the spot was reduced. Seedlings growing under complete and partial shade and those heavily manured were noticed to be resistant to the attack.

Laboratory studies on the efficacy of different fungicides as well as field trials are underway

percent Bordeaux mixture once a week reduced the severity of the disease.

Summary

A *Curvularia* Sp. causing a yellow leaf-spot and blight in arecanut seedlings has been described. The attack is virulent during summer months especially under exposed conditions. Spraying with one

Acknowledgment

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Explanation to figures

- Plate I. Culture on Oat Agar Media.
- Plate II. Spores and Mycelium x 450 T. L.
(a) Spores.
(b) Conidiophores.
(c) Germination of spores.
(d) Mycelium.
- Plate III. Inoculated leaves showing yellow-spot infection.

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